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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/713,819

11/14/2003

Eisuke Wadahara

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EXAMINER

PIZZALI, ANDREW T

ART UNIT

PAPER NUMBER

1794

MAIL DATE

DELIVERY MODE

04/06/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/713,819

Applicant(s)

WADAHARA ET AL.

Examiner

Andrew T. Piziali

Art Unit

1794

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15-19, 22 and 46-50 is/are pending in the application.
- 4a) Of the above claim(s) 47 and 50 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15-19, 22, 46, 48 and 49 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. The amendment filed on 3/16/2009 has been entered.

Election/Restrictions

2. Newly submitted claims 47 and 50 are directed to a species that is non-elected. In the reply filed 7/15/2005 the applicant elected Species II, not Species III. See page 9, second full paragraph and page 70, second full paragraph of the current specification. Accordingly, claims 47 and 50 are withdrawn from consideration as being directed to a non-elected invention.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 15-17, 19, 22 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 03/004758 to Wadahara (USPN 7,138,345 to Wadahara is cited as a translation document) in view of USPN 3,881,522 to Lewis.

Wadahara discloses a preform comprising a thermosetting resin as a matrix resin; a plurality of stacked and integrated substrates including at least one reinforcing carbon fiber substrate comprising a reinforcing carbon fiber yarn group arranged with reinforcing carbon fiber yarns having a yield of 350 to 3,500 tex in parallel to each other in a warp-direction, and a weft-direction auxiliary yarn group formed by auxiliary yarns extending in a direction across said reinforcing carbon fiber yarns and having a yield of 1% or less of the yield of said reinforcing carbon fiber yarn, and having a yield of 2 tex or less; and a powder-interlamina-toughening resin material containing thermoplastic polyetherimide, polyphenyleneether or polyethersulfone as a main constituent provided at 1 to 20 % by weight of the fiber substrate and studded at least on a surface of said reinforcing carbon fiber substrate (see entire document including column 3, lines 33-55, column 9, lines 51-61, column 10, lines 36-65, column 11, lines 13-26, column 13, lines 26-63, and column 19, lines 62-65). Wadahara discloses that the thickness of the reinforcing fabric substrate is from 0.1 to 0.8 mm (column 3, lines 23-28).

Wadahara appears to be silent with regards to specific gap distances, therefore, it would have been obvious to look to the prior art for conventional gap distances. Lewis provides this conventional teaching showing that it is known in the art to vary the gap distance based on the desired flexibility and pliability (see entire document including column 3, lines 12-21). Lewis specifically mentions a gap distance of 1.6 mm (see column 6, lines 16-33), but Lewis does not limit the gap to this distance. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to vary the distance between adjacent reinforcing fibers, such as from 0.1 to 1 mm, because the gap distance determines the flexibility and

pliability of the fabric and because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

Regarding the claimed properties, considering that the preform taught by the applied prior art is substantially identical to the claimed reinforcing fiber substrate (unidirectional reinforcing fiber structure comprising weft auxiliary yarns aligned in a specific orientation in a specific amount and also comprising resin in a specific shape and in a specific amount), it appears that if the composite reinforcing fiber volume fraction was 53 to 65% it would inherently possess the claimed properties.

Regarding claims 16 and 17, Wadahara discloses the claimed warp-direction and weft-direction auxiliary yarns (column 11, lines 31-43).

Regarding claim 19, Wadahara discloses that the mean diameter of the studded resin is 1 mm or less (paragraph bridging columns 8 and 9).

Regarding the claim 22, considering that the preform taught by the applied prior art is substantially identical to the claimed reinforcing fiber substrate (unidirectional reinforcing fiber structure comprising weft auxiliary yarns aligned in a specific orientation in a specific amount and also comprising resin in a specific shape and in a specific amount), it appears that if the composite reinforcing fiber volume fraction was 53 to 65% it would inherently possess the claimed properties.

Regarding claim 46, Wadahara discloses that the thermosetting resin may be epoxy resin or the like (column 11, lines 13-26).

5. Claim 18, 48 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 03/004758 to Wadahara (USPN 7,138,345 to Wadahara is cited as a translation document) in view of USPN 3,881,522 to Lewis as applied to claims 15-17, 19, 22 and 46 above, and further in view of USPN 5,132,394 to Bockrath.

Wadahara does not appear to specifically mention a sizing agent, but Bockrath discloses that it is known in the reinforcing fiber fabric art to apply a binder sizing agent to cover the fibers to facilitate the weaving process, improve adhesion between fibers and the matrix resin, and/or to avoid or minimize loss of fiber properties (see entire document including column 10, line 29 through column 12, line 8). It would have been obvious to one having ordinary skill in the art at the time the invention was made to apply a sizing agent to the auxiliary fibers, as taught by Bockrath, because the sizing agent would facilitate the weaving process, improve adhesion between fibers and the matrix resin, and/or would avoid or minimize loss of fiber properties.

Response to Arguments

6. Applicant's arguments filed 3/16/2009 have been fully considered but they are not persuasive.

The applicant asserts that the applied prior art fails to teach or suggest the claimed maximum cross-sectional waviness. The examiner respectfully disagrees. Wadahara discloses that the thickness of the reinforcing fabric substrate is from 0.1 to 0.8 mm (column 3, lines 23-28).

Regarding newly added claims 48 and 49, the applicant asserts that the applied prior art fails to teach or suggest the claimed sizing or collecting treatment. The examiner respectfully

disagrees. Wadahara does not appear to specifically mention a sizing agent, but Bockrath discloses that it is known in the reinforcing fiber fabric art to apply a binder sizing agent to cover the fibers to facilitate the weaving process, improve adhesion between fibers and the matrix resin, and/or to avoid or minimize loss of fiber properties (see entire document including column 10, line 29 through column 12, line 8). It would have been obvious to one having ordinary skill in the art at the time the invention was made to apply a sizing agent to the auxiliary fibers, as taught by Bockrath, because the sizing agent would facilitate the weaving process, improve adhesion between fibers and the matrix resin, and/or would avoid or minimize loss of fiber properties.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew T. Piziali whose telephone number is (571) 272-1541. The examiner can normally be reached on Monday-Friday (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on (571) 272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Andrew T Piziali/
Primary Examiner, Art Unit 1794